

RECORD OF DECISION  
DECLARATION, DECISION SUMMARY,  
AND RESPONSIVENESS SUMMARY  
FOR

YAKIMA PESTICIDE LABORATORY  
YAKIMA, WASHINGTON

SEPTEMBER 1992

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10  
1200 SIXTH AVENUE  
SEATTLE, WASHINGTON

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DECLARATION STATEMENT

PESTICIDE LAB (YAKIMA) SITE

RECORD OF DECISION

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Pesticide Lab (Yakima)  
Yakima, Yakima County, Washington

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Pesticide Lab (Yakima) Site in Yakima, Washington, which was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision document explains the factual and legal basis for selecting the remedy for this Site.

The Washington State Department of Ecology (Ecology) concurs with the selected remedy. The information supporting this remedial action decision is contained in the administrative record for this Site.

SUMMARY OF RATIONALE FOR NOT TAKING ACTION

The U.S. Environmental Protection Agency (EPA) has determined that the Pesticide Lab (Yakima) Site does not require further remedial action pursuant to CERCLA. This determination is based on the assessment of present conditions at the Site. This Site has been the subject of remedial activities pursuant to RCRA. Remedial activities at the Site according to RCRA regulations and Ecology regulations have resulted in a "clean closure" of the hazardous waste disposal system at the Site. "Clean closure" according to RCRA means that all waste residues, including subsoils, have been removed or decontaminated. For this Site contaminated material was defined as material containing hazardous substances posing a risk of greater than 10<sup>-6</sup> based on a worst case residential exposure scenario. "Clean closure" standards are sufficiently strict to protect the public and the environment without requiring further care of the site after remedial activities have been completed. It has been one of the Agency's primary objectives in development of the RCRA corrective action regulations to achieve substantial compliance with the CERCLA remedial program. Monitoring of groundwater and soil remaining around the contaminated area indicates that the

remedial activities implemented under RCRA have resulted in removal of contaminated material from the site (cleanup levels have been achieved and, in most cases, contaminants were not detected) allowing for unlimited use and unrestricted exposure within the Site.

Considering the standards for achieving "clean closure" and the determination that such standards have been achieved at the Pesticide Lab (Yakima) Site, it is evident that the conditions at the Site do not warrant remedial action under CERCLA.

#### DECLARATION OF STATUTORY DETERMINATIONS

EPA has determined that it is not appropriate to use CERCLA statutory authority to remediate this Site. Part 265, Subpart G of RCRA, as amended by the Solid Waste Disposal Act of 1980 is the Federal authority under which this Site was remediated. In reviewing the present conditions at the site EPA has determined that no action under CERCLA is necessary. A five-year review will not be necessary for this Site because no hazardous substances remain on site above levels of concern.

#### CERTIFICATION OF COMPLETION

EPA has determined that no further remedial action is necessary at this site. Therefore, the site now qualifies for inclusion in the "sites awaiting deletion" subcategory of the Construction Completion category of the National Priorities List.

Dana A. Rasmussen  
Dana Rasmussen, Regional Administrator  
Environmental Protection Agency, Region 10

9/30/92  
Date

## DECISION SUMMARY

### PESTICIDE LAB (YAKIMA) SITE

#### **SITE NAME, LOCATION, AND DESCRIPTION**

The Site listed on the NPL as the Pesticide Lab (Yakima) Site is located at the Yakima Agricultural Research Laboratory (YARL) in Yakima, Yakima County, Washington. The town is situated in the southcentral section of Washington east of the Cascade Mountains in relatively flat, dry land. Approximately 50,000 people are located in Yakima. The research laboratory consists of numerous office and laboratory research buildings, warehouses, storage sheds, maintenance buildings and greenhouse/hothouse buildings occupying approximately 15% of an approximately 10 acre parcel in Yakima. (See Figure 1) The remaining acreage is used for cultivation of row crops and fruit trees. YARL is situated in a residential area within one-half mile of three schools, two hospitals and three shopping centers. The Site consists of a septic tank, disposal pipe, washdown pad and drainfield system used for the disposal of dilute pesticide compounds used at the YARL.

#### **SITE REGULATORY HISTORY**

The research laboratory, originally an orchard, has been in operation since 1961. The primary activity at the laboratory involves the development of insect control technologies that benefit fruit and vegetable agriculture in the Pacific Northwest. Records indicate that the area was sprayed with various pesticide compounds including persistent organochlorine pesticides such as DDT, Dieldrin, and Lindane. Workers at the laboratory used a modified septic and drainfield system to discharge dilute waste pesticide compounds. The system consisted of a 300 gallon concrete septic tank which drained a conventional toilet/sink and an outside concrete surface washdown pad. Tank effluent was discharged through a tile drain. Approximately 5,000 gallons of rinsate from equipment cleaning operations and less than 250 gallons of residual pesticide solutions were discharged into the system annually for about 20 years (from 1965 to 1985). The unit was the only hazardous waste management system at the YARL facility. The unpermitted discharges resulted in investigations under RCRA and CERCLA at the YARL facility. There were concerns that pesticides and solvents had leached into the uppermost, shallow, drinking-water aquifer were identified because of the presence of highly permeable sands and gravels.

YARL submitted a RCRA Part A permit application in September 1980 and received interim status. A preliminary assessment and site investigation (PA/SI) was conducted in June 1982. Field work for the PA/SI was limited to shallow soil sampling and a failed attempt to drill to groundwater. The PA/SI concluded that soil was contaminated due to discharges from the septic system and that groundwater contamination was likely based on an

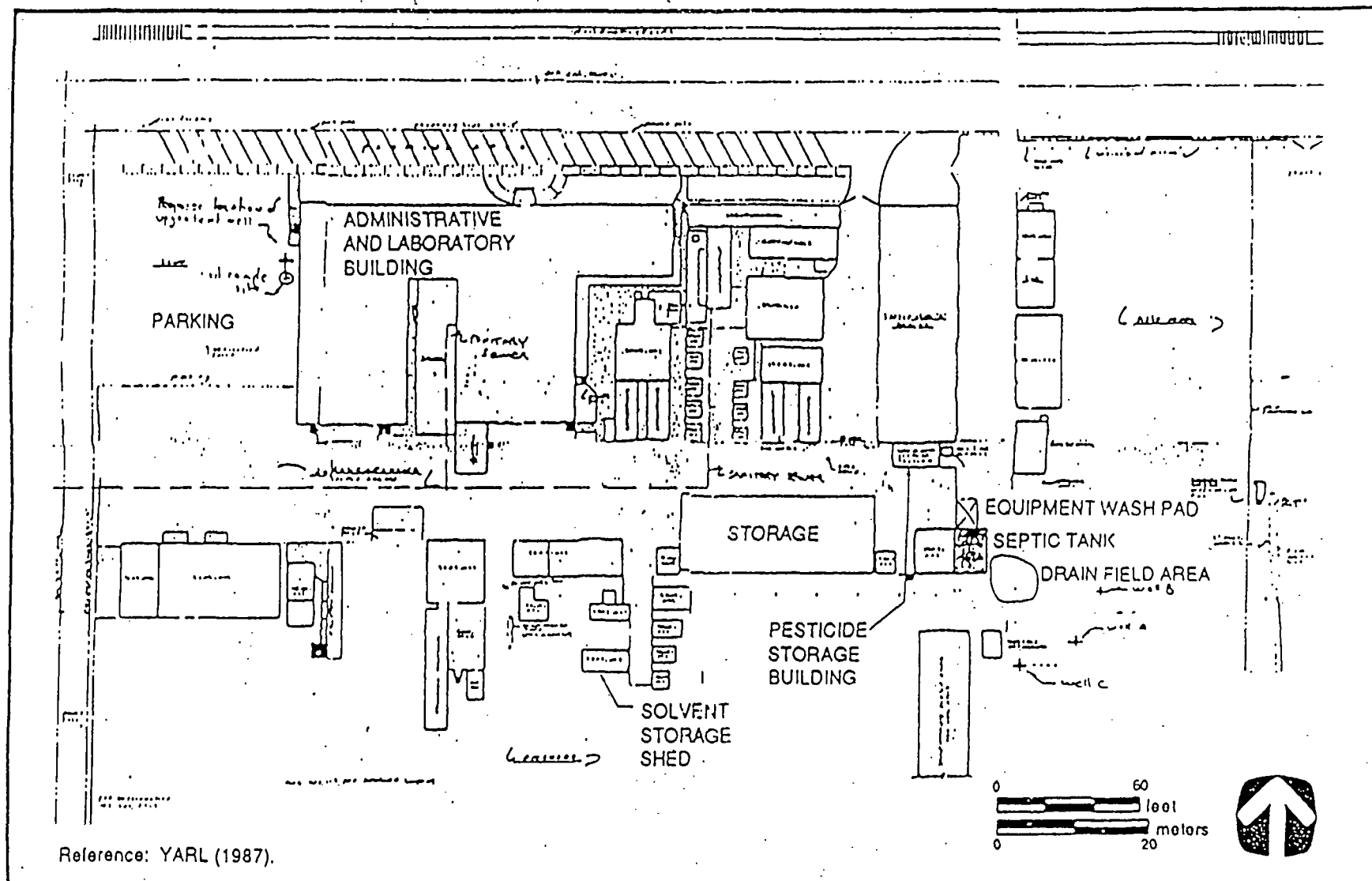


Figure 1. YARL site map.

incorrectly assumed groundwater depth of 20 feet. (Later the correct depth was determined to be 35 feet). Based on the results of the PA/SI, the Site was proposed for the NPL in December 1982 and finalized on September 8, 1983 (48 FR 40658). The Site is currently on the NPL, based on the original 1982 Hazard Ranking Score of 29.33. The relatively low hazard ranking of the Site was based on sparse near-surface soils data and no ground water monitoring data.

#### CONTAMINANTS AND POTENTIAL EXPOSURE PATHWAYS OF CONCERN

On June 2, 1988, a RCRA Facility Assessment (RFA) was completed by EPA which included a preliminary characterization of the conditions at the Site, identified additional work needed to fully characterize the Site, and described the results from a visual inspection. The RFA assessed exposure pathways that may be of concern given the nature of the releases at the Site and the substances released. Preliminary on-site sampling identified pesticides in septic tank water and the surrounding subsurface soil. The report concluded that the extent of groundwater and soil contamination could not be assessed without more information. EPA and the Washington State Department of Ecology (Ecology) coordinated investigative work and remedial oversight at the site.

Wastes generated at the site consist of a wide variety of pesticide mixtures, rinsates from the cleaning of sprayers and other equipment, and solvents. The RFA estimated that approximately 5,000 gallons of rinsate from equipment cleaning operations and less than 250 gallons of residual pesticide solutions were discharged into the system annually for about 20 years (from 1965 to 1985). Ecology estimated that several hundred compounds, in small quantities, were disposed of during the 20 years that the septic tank/drainfield were in operation. Complete records indicating the names and quantities of chemicals disposed of through the system are not available. Diluted pesticides known to have been introduced into the system with wastewater include but are not limited to Guthion, Sevin, Malathion, Parathion, Tetraethylpyrophosphate (TEPP), DDT, Temik, Methoxychlor, Kelthane, Lindane, Captan, Cyprez and Benelate. Heavy metals, including lead arsenate, and pesticide concentrates were never discharged to the septic tank/drainfield system. An example of the diversity and low volumes of pesticides used on-site is represented by Table 1, listing names and quantities of pesticides used in the 1986 growing season. Even though Table 1 refers to pesticides used on-site in 1986 and the septic tank system was closed in 1985, the Table represents the types and quantities of pesticides used at the site in recent years.

DDT, Lindane, Methoxychlor and Captan are organochlorine pesticides. This class of compounds generally are persistent (in soil for 30 plus years), exhibit low mobility in the soil and a resistance to microbial and chemical degradation. Guthion,

TABLE 1. PESTICIDES FOR 1986 EXPERIMENTS AND PLOT MAINTENANCE

Advantage (I) <sup>a</sup>	1-2 gal	Noxfire (I)	1 qt
Alar (Plant GR) <sup>b</sup>	1 lb	Omite CR (I)	3 lb
Ammo (I)	1 lb	Orthene (I)	1 lb
Bayleton 50W (F) <sup>c</sup>	4 lb	Orthene (I)	1 lb
Baysir 25W (I)	1 lb	PBU-26 PB-Nox (I)	1 qt
Bay bue 1452 (I)	1 lb	PBU-26 piperonyl butoxide (I)	1 pt
Baytex 4 (I)	1 gal	Parathion (I)	4 lb
Butamin P&O (I)	1 cup (4 oz)	Pentac (I)	1 lb
Bay FCR 1272 (I)	1 pt	Pirimor 50W (I)	1.5 lb
Captan 25 percent SP (F)	11 lb	Pounce (I)	1 qt
Casoron (H)	20 lb	Princep 4L (H) <sup>d</sup>	1 gal
Chlorban granules (I)	1 lb	Pydrin 2.4 EC (I)	3 pt
Cymbush (I)	1 qt	Pyrenone (I)	1 cup (4 oz)
Cyprex 65W (F)	3 lb	Round-up (H)	1.75 gal
Diazinon (I)	4 lb	SBP 1382 (I)	1 pt
Dibrom 8EC (I)	2 gal	Sectrol (I)	24 oz
Dimilin 25W (GR)	10 lb	Spur (I)	1 qt
Disyston (I)	1 gal	Supracide (I)	2 gal
Dursban (I)	3 lb	Supreme oil (I)	50 gal
Furadan 15G (I)	5 lb	Surflan (H)	1 pt
Insectatapes (I)	12 cartons	Tempo 2C	16 oz
MK-936 (I)	1 L	TH 6043 25W (GR)	8 oz
Monitor 4EC (I)	1 pt	TH 6044 25W (GR)	8 oz
Morestan (I)	2 lb	TH 6045 25W (GR)	8 oz
Nicotine sulphate	2 pt	Zolone (I)	1 gal
Nudrin (I)	1 qt		

<sup>a</sup> (I) = Insecticide.

<sup>b</sup> (F) = Fungicide.

<sup>c</sup> (GR) = Granular insecticide.

<sup>d</sup> (H) = Herbicide.

Reference: Pankanin, J., 20 February 1987, personal communication.



Malathion, Methoxychlor, Parathion and TEPP are examples of organophosphate and carbamate pesticides which generally are not persistent in soil (less than several months) and degrade rapidly. Both organophosphates and carbamates are susceptible to chemical and microbial decomposition.

The low mobility, low water solubility, and resistance to degradation of organochlorine compounds suggest that they were likely to be contained in the soil beneath the drainfield. Organochlorine compounds have a strong tendency to attach to soil organic and mineral colloids. In comparison, organophosphate and carbamate compounds are dispersed rapidly from the soil due to the susceptibility of these compounds to chemical and microbial decomposition. These compounds are not likely to be detected in the soil at the site.

Prior to remediation, the preliminary environmental pathways of concern related to the hazardous waste disposal system were groundwater, on-site soils and possibly surface water. Additionally, if contamination of ground/surface water was detected, other pathways of concern could be bioaccumulation of contaminants in fish and human exposure resulting from ingestion of and direct contact with ground/surface water and soil and possible ingestion of bioaccumulated contamination in the food chain.

Air was not a pathway of concern for contaminant migration because contaminants were introduced to the soil 2 feet below the ground surface and were not likely to migrate to the air because of their low volatility. The potential for contaminant migration through the air is extremely low.

Subsurface gas was not a pathway of concern for contaminant migration because the contaminants were introduced in dilute form and not capable of developing subsurface gas in explosive or toxic concentrations.

In 1983, Ecology collected a water sample from the septic tank. The sample was analyzed by the U.S. EPA Region 10 laboratory. Concentrations of Aldrin, Dieldrin, DDT, Endosulfan, and Endrin found in the septic tank sample exceeded water quality criteria for drinking water consumption.

Prior to remediation, surface water was identified as a potential pathway for human exposure to contaminants associated with the septic tank drainfield. Wide Hallow Creek is located approximately 0.5 mile south of the site in the presumed direction of groundwater flow. Because Wide Hallow Creek is used for bank fishing and domestic irrigation, if groundwater were contaminated, and if it discharged to this creek, it could affect aquatic biota, irrigated crops, and people who use these resources. Wide Hallow Creek is the nearest surface water

downgradient from the site in the presumed direction of groundwater flow. Contaminated groundwater flowing toward the south-southeast may release contaminants to Wide Hollow Creek. Wide Hollow Creek flows east-southeast to eventually join the Yakima River. Surface runoff is minimal because the soils are permeable and the gradient is relatively gentle (3 percent). Water to Yakima residents is either pumped from the Naches River or from municipal wells which are not within the vicinity of the site (closest backup well is one and a half miles from the site). The Naches River is 2.5 miles north of the site.

Another pathway of concern for contaminant migration, prior to remediation, was groundwater. Several residences south of the site obtain drinking water from domestic wells. Because the septic tank and drainfield system allowed pesticides to permeate the soil and the area is characterized by highly permeable sands and gravels, there was a concern that pesticides may have leached into the shallow drinking water aquifer. Some of these domestic wells were presumed to be downgradient of the site.

Soil was identified as another plausible pathway of concern for this Site. In 1983, Ecology collected three subsurface soil samples (at depths of 2 feet, 5 feet, and 5.5 feet) from the drainfield area. Samples were analyzed by the U.S. EPA Region 10 lab. Analytical results indicated that the concentration of DDT was 3 mg/kg in one soil sample collected near the drainfield.

#### **CHARACTERIZATION OF RISK**

In 1988, YARL removed the drainfield, sampled soil within and outside the excavated drainfield area, sampled and gathered additional groundwater monitoring and sampling information from four monitoring wells (installed in April of 1988) and performed in-situ aquifer testing (slug tests). Sampling was conducted for a lengthy list of primary and indicator parameters developed to determine ground water quality and to monitor for the presence of the compounds believed to have been discharged through the septic tank/drainfield system.

The subsequent study that was developed concluded that the ground water quality was generally excellent and that the likelihood for ground water contamination, as a result of the hazardous waste disposal activities, was low at the Site. The study detected a variety of hazardous pesticides and carrier solvents in the tank sludge and drainfield. Based on these data, EPA decided that the Site was subject to the requirements for hazardous waste treatment, storage, and disposal (TSD) facilities, under RCRA.

Additional groundwater monitoring wells were installed in 1990, for a total of seven on-site wells, to facilitate groundwater assessment. Quarterly monitoring (five quarters) indicate groundwater concentrations of DDT and Dieldrin and other

regulated pesticides did not exceed health-based criteria or cleanup levels. No organic compounds were detected.

Based on the results of the groundwater monitoring, EPA and Ecology believe that the groundwater associated with this Site does not pose a significant risk to public health and the environment. Similarly, EPA and Ecology are not concerned about surface water contamination via groundwater contamination.

#### **REMEDIAL ACTION SELECTED AND IMPLEMENTED UNDER RCRA**

Based on the low hazard ranking and the initial ground water data, clean closure pursuant to RCRA requirements for interim status facilities (40 CFR Part 265) was undertaken instead of initiating either a Subpart B application under RCRA or conducting a Remedial Investigation and Feasibility Study pursuant to CERCLA. This approach is consistent with Ecology's Model Toxics Control Act Cleanup Regulations.

An initial Closure Plan ("clean up plan") for the septic tank and drainfield, including a monitoring plan for sampling and analyzing groundwater and soil, was submitted by YARL in January 1985. A final revised Closure Plan was submitted on September 12, 1989 for approval after four groundwater monitoring wells were installed in April 1988 at the Site. The September 12, 1989 final draft Closure Plan was released for public comment in December 1989. No comments were received. The Closure Plan was approved on January 30, 1990. As required by the approved Closure Plan, three additional wells were drilled and completed by July 1990.

The principal elements of the Closure Plan focused on removing the potential sources of contamination through removal and disposal of the septic tank contents, excavation and removal of the septic tank itself, washdown pad removal, additional background soil sampling, excavation and removal of contaminated soil to obtain cleanup levels, confirmational soil sampling around the removed structures, installation of ground water monitoring wells and one year of groundwater sampling. Calculation of cleanup levels for contaminants at this Site were based on EPA's proposed RCRA Subpart S standards as described in 55 FR 30798, July 27, 1990. Where cleanup levels for specific contaminants were not identified, consistent with Subpart S, the Agency approved cleanup levels based on a cumulative noncarcinogenic risk estimate of less than 1.0 assuming daily intake and a lifetime incremental cancer risk of less than one in a million (within EPA's and Ecology's acceptable risk range for carcinogens). levels.

Cleanup levels were developed, as described above, for those pesticide compounds found in high concentrations in the septic tank that were moderately to highly mobile, persistent or toxic. The cleanup levels adopted in the Closure Plan are as follows:

Pesticide Compound	Concentration (ppm)
2,4 D	850.000
Chlorpyrifos	255.000
DDT	0.830
Dieldrin	0.440
Disulfoton	3.000
Endosulfan ( and II)	4.000
Endrin	20.000
Heptachlor	0.200
Heptachlor Epoxide	0.080
Hexachlorocyclohexane	0.500
Lindane	25.500

Reference Doses (RfDs) and Carcinogenic Potency Factors (CPFs) were obtained from EPA's Reference Dose Tracking System, August 1989, and EPA's Integrated Risk Information System (IRIS). The primary exposure route of concern, in the absence of groundwater contamination, was through soil. Cleanup levels were established assuming the most conservative exposure scenario because the site is surrounded by residential areas. The scenario assumed oral ingestion of contaminated soil by children. See Appendix A for more details about RfDs and CPFs.

"Clean closure" activities occurred in four phases. Phase One consisted of removing and disposing of the septic tank contents, the septic tank and the washdown pad followed by sampling of tank contents and soil. In Phase Two, soil was excavated from around the septic tank and washdown pad, followed by sampling. Phase Three consisted of soil excavation from around the washdown pad area, followed by soil sampling. The last and final phase, Phase Four, included pipe removal and soil sampling in the area around the pipe. Soil was successively excavated in phases until confirmational sampling indicated that "clean closure" had been achieved.

In total, approximately 40 cubic yards of contaminated soil containing pesticides above the cleanup levels were removed from the former tank/pad area and disposed of at a permitted hazardous waste TSD facility.

Two background samples taken during the initial closure phase (tank/pad removal) showed low parts-per-billion (ppb) levels of pesticide residuals such as Dieldrin and DDT. These and similar substances are expected to be found in this area due to historical, legal application of pesticides totally unrelated to the former YARL septic disposal practices.

## **SUMMARY OF POST-REMEDIAL SITE RISKS**

PCBs, volatile organics, semi-volatile organics and metals were below detection limits in confirmational analysis of soil samples. Organophosphorus pesticides, identified in the tank contents, also were not detected in the soils around the septic tank system. Final confirmational soil monitoring indicated that average DDT and Dieldrin concentrations were below cleanup levels, Endrin and Endosulfan were several orders of magnitude (100 to 1000 times) below cleanup levels and other organochlorine pesticides were not detected.

Analytical data based on quarterly monitoring (45 valid samples in 5 quarters) indicate groundwater concentrations of DDT, Dieldrin and other regulated pesticides and volatile organics were below cleanup levels and in fact were not within the detectable range. (Detection limits are several orders of magnitude below cleanup levels.) Minor quantities of metals, including mercury, vanadium, and zinc, were detected lower than the maximum contaminant levels (MCLs) for drinking water.

Based on the removal of contaminated equipment and excavation of contaminated soil, and confirmational soil and groundwater monitoring data, EPA and Ecology agree that hazardous materials were removed from the Site thus allowing for unlimited use and unrestricted exposure within the Site. Confirmational monitoring of soil and groundwater demonstrate that no significant risk to public health or the environment is posed by the residual materials remaining at the Site. All exposure pathways of concern have been addressed.

No environmental risk has been identified for this site. For example, no critical habitats or endangered species or habitats of endangered species have been identified for this site.

## **SELECTED REMEDY - NO FURTHER ACTION DECISION**

EPA and Ecology agree that the site is protective of public health and the environment for all pathways of exposure and no further action is necessary in order to provide protection of human health and the environment.

The sampling and analysis section of the Closure Plan was reviewed and approved by the EPA and Ecology. The plan was suitable to characterize the potential contamination of the Site and to determine contaminant removal from the site. Appropriate quality control measures and laboratory quality control protocols were implemented for the sample collection and analysis activities in accordance with the approved Closure Plan. Sample analyses were conducted according to methods contained in the EPA document "Test Methods for Evaluating, Solid Wastes, Physical/Chemical Methods (SW-846)."

EPA's and Ecology's proposal for No Further Action is based on the results of the post-removal soil and groundwater sampling which indicate that the risk posed by substances at the Site is within the protective range. Specifically, substances detected in soil and groundwater sampling are below or within the  $10^{-6}$  risk range. Most substances analyzed for in soil and groundwater were not detectable.

The Closure Plan, which specifies RCRA closure standards for a particular site, detailed the requirements for "clean closure" for the Yakima site. Both EPA and Ecology RCRA programs have certified clean closure completion. Clean closure as defined in the RCRA Closure Plan and implemented at the Site is defined as the cleanup to a level of soil concentrations less than the established risk-based cleanup levels. Given the "clean closure" (no significant contamination left at the site) and the unlimited use and unrestricted exposure classification for the site, operation and maintenance activities and a 5-year review are not required at the site.

#### **SCOPE OF RESPONSE ACTION WITHIN SITE STRATEGY**

The Site as defined on the NPL consists of a septic tank, drainfield and washdown pad. Removal of the septic tank and washdown pad and the excavation of the drainfield and surrounding contaminated soil constitute the complete and final action specified for the Site under Federal and State Superfund and RCRA programs.

#### **HIGHLIGHTS OF COMMUNITY PARTICIPATION**

Community involvement activities for this Site are unusual because, although listed on the NPL, the Site has not been managed under the authority of CERCLA. Remedial actions at the Site were conducted pursuant to RCRA clean closure requirements. As a RCRA site, community relations activities prior to closure have been conducted pursuant to RCRA requirements.

During the remedial activities conducted under RCRA, community concern and involvement regarding the Site was minimal. This is particularly reflected by the fact that no public comments were received during the public comment period for the 1989 final draft Closure Plan.

Concurrent with approval of the ROD, EPA is proposing to delete the Site from the NPL. A Community Involvement Plan for Site Deletion was prepared in the Summer of 1992. This plan outlines the necessary public involvement requirements to delete the site from the NPL under CERCLA. The Agency compiled a mailing list of key local officials and other interested parties, established information repositories, held a public hearing, and notified the local media about the Proposed Plan and public comment period. The public hearing was held on September 10,

1992. The 30-day public comment period for the No Action Proposed Plan ended on September 22, 1992. No comments were received from the public during either the comment period of the public hearing.

The information repositories and deletion docket are located at:

Washington Department of Ecology  
Central Regional Office  
Attn: Michelle Slater  
106 South 6th Avenue  
Yakima, WA 98902

and

Region 10 U.S. EPA Library  
1200 6th Avenue  
Seattle, WA 98101

Community activities surrounding the deletion of the Site from the NPL will comply with the NCP and "Community Relations in Superfund: A Handbook", as appropriate.

#### **STATE ACCEPTANCE**

The State of Washington's Department of Ecology has concurred on this remedy without comment.

#### **COMMUNITY ACCEPTANCE**

EPA did not receive any public comments on the Closure Plan for this site. The Closure Plan proposed remedial action for this site included cleanup levels. A 30-day comment period was provided.

A 30-day public comment period was also provided for the RCRA equivalency determination and CERCLA's No Further Action Proposed Plan. No public comments were received.

#### **DOCUMENTATION OF SIGNIFICANT CHANGES**

There have been no significant changes in the decision as described in the Closure Plan.

## APPENDIX A



## Appendix A

### Details About CPFs and RfDs

CPFs have been developed by EPA's Carcinogenic Assessment Group for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. CPFs, which are expressed in units of  $(\text{mg/kg-day})^{-1}$ , are multiplied by the estimated intake of a potential carcinogen, in  $\text{mg/kg-day}$ , to provide an upper-bound estimate of the excess lifetime cancer risk associated with exposure at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the CPF. Use of this approach makes underestimation of the actual cancer risk highly unlikely. CPFs are derived from the results of human epidemiological studies or chronic animal bioassays to which animal-to-human extrapolation and uncertainty factors have been applied.

RfDs have been developed by EPA for indicating the potential for adverse health effects from exposure to chemicals exhibiting noncarcinogenic effects. RfDs, which are expressed in units of  $\text{mg/kg-day}$ , are estimates of lifetime daily exposure levels for humans, including sensitive individuals, that is not likely to be without an appreciable risk of adverse health effects. Estimated intakes of chemicals from environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) can be compared to the RfD. RfDs are derived from human epidemiological studies or animal studies to which uncertainty factors have been applied (e.g., to account for the use of animal data to predict effects on humans). These uncertainty factors help ensure that the RfDs will not underestimate the potential for adverse noncarcinogenic effects to occur.

Excess lifetime cancer risks are determined by multiplying the intake level with the cancer potency factor. These risks are probabilities that are generally expressed in scientific notation (e.g.,  $1 \times 10^{-6}$  or  $1\text{E-}6$ ). An excess lifetime cancer risk of  $1 \times 10^{-6}$  indicates that, as a plausible upper bound, an individual has a one in one million chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year lifetime under the specific exposure conditions at a site.

Potential concern for noncarcinogenic effects of a single contaminant in a single medium is expressed as the hazard quotient (HQ) (or the ratio of the estimated intake derived from the contaminant concentration in a given medium to the contaminant's reference dose). By adding the HQs for all contaminants within a medium or across all media to which a given population may reasonably be exposed, the Hazard Index (HI) can be generated. The HI provides a useful reference point for

gauging the potential significance of multiple contaminant exposures within a single medium or across media.

## APPENDIX B

## Appendix B

### **YAKIMA PESTICIDE LAB SITE RESPONSIVENESS SUMMARY**

#### **I. OVERVIEW**

The Yakima Pesticide Lab Site is located at the Yakima Agricultural Research Laboratory (YARL) in Yakima, Washington. The Site is a septic tank system containing a 300 gallon concrete septic tank, a disposal pipe, washdown pad and drainfield used for the disposal of dilute pesticide compounds used at YARL. The system drained a conventional toilet/sink and an outside concrete surface washdown pad. Tank effluent was discharged through a tile drain.

Approximately, 5,000 gallons of rinsate from equipment cleaning operations and less than 250 gallons of residual pesticide solutions were discharged into the system annually for about 20 years from 1965 to 1985. The Site was listed in the NPL in 1983 because of concerns that pesticides and solvents had leached into the uppermost, shallow, drinking-water aquifer.

Based on preliminary site assessment investigations, including soil sampling and groundwater monitoring data, EPA decided that the Site was subject to the requirements for hazardous waste treatment, storage, and disposal (TSD) facilities. A RCRA Closure Plan was approved by EPA and Ecology. The Plan specified removing the potential sources of contamination through removal and disposal of the septic tank and its contents, washdown pad removal, additional soil sampling, excavation and removal of contaminated soil to obtain cleanup levels, confirmational soil sampling, installation of additional groundwater monitoring wells and one year of groundwater monitoring. Soil sampling and groundwater monitoring data show that contaminants were below the cleanup levels and, in most cases, the contaminants were below the levels of detection.

#### **II. COMMUNITY RELATIONS**

CERCLA requirements for public participation include releasing the Abbreviated Remedial Investigation and Proposed Plan to the public and providing a public comment period. These documents and all other supporting documents were placed in the information repositories and the public comment period was held from August 24, 1992 to September 22, 1992. EPA published a notice of the release of the Abbreviated Remedial Investigation and Proposed Plan in the Yakima Herald Republic on August 24, 1992. EPA, also notified all interested parties by special a

mailing of the public comment notice. A public meeting was held at the Yakima Public Valley Regional Library in Yakima on September 10, 1992. RCRA requirements for public participation were also followed for this Site.

The purpose of the Responsiveness Summary is to address public comments received on the Abbreviated Remedial Investigation and Proposed Plan. However, no comments or questions were received during the comment period.

## APPENDIX C

## PESTICIDE LABORATORY YAKIMA (YARL) - A/R INDEX

HEADING: 1. 0. . SITE IDENTIFICATION

SUB-HEAD: 1. 1. . Background

1. 1. . - 0001 Microfilm Reel Frame Begins 1 Ends 1

DATE: 06/02/88 PAGES: 150

AUTHOR: Jacobs Engineering Group Inc./Environmental Systems Division

ADDRESSEE: /

DESCRIPTION: TES IV, Final Report, RCRA Facility Assessment, Yakima  
Agricultural Research Laboratory

SUB-HEAD: 1. 2. . PA/SI

1. 2. . - 0001 Microfilm Reel Frame Begins 1 Ends 1

DATE: 06/29/82 PAGES: 10

AUTHOR: Ecology and Environment Inc./

ADDRESSEE: EPA/

DESCRIPTION: Potential Hazardous Waste Site, Site Inspection Report

1. 2. . - 0002 Microfilm Reel Frame Begins 1 Ends 1

DATE: 07/08/82 PAGES: 12

AUTHOR: Jacqueline Betz/Ecology and Environment, Inc.

ADDRESSEE: John Osborn/EPA

DESCRIPTION: Background information about the site; water well reports

## PESTICIDE LABORATORY YAKIMA (YARL) - A/R INDEX

HEADING: 2. 0. . PROJECT PLAN

SUB-HEAD: 2. 1. . Correspondence

2. 1. . - 0001 Microfilm Reel Frame Begins 1 Ends 1

DATE: 01/30/90 PAGES: 1

AUTHOR: Michael F. Gearheard/EPA

ADDRESSEE: Richard C. Bachman/U.S. Dept. of Agriculture

DESCRIPTION: Letter stating that no comments were received from the public on the closure plan and that the plan may now be implemented

2. 1. . - 0002 Microfilm Reel Frame Begins 1 Ends 1

DATE: 11/28/89 PAGES: 1

AUTHOR: Chuck Shenk/EPA

ADDRESSEE: Dennis Bowhay/Washington Dept. of Ecology

DESCRIPTION: Letter stating that the closure plan has been reviewed, that it satisfies requirements, and it is ready for public notice

SUB-HEAD: 2. 2. . Project Plan

2. 2. . - 0001 Microfilm Reel Frame Begins 1 Ends 1

DATE: 05/14/90 PAGES: 123

AUTHOR: Alvin Humphrey/U.S. Dept. of Agriculture

ADDRESSEE: Debbie Robinson/EPA

DESCRIPTION: Letter transmitting draft Project Plan for Disposal of Hazardous Waste Septic System



## PESTICIDE LABORATORY YAKIMA (YARL) - A/R INDEX

HEADING: 3. 0. . CLOSURE PLAN

SUB-HEAD: 3. 1. . Closure/Completion Reports

3. 1. . - 0001 Microfilm Reel Frame Begins 1 Ends 1

DATE: 10/03/86 PAGES: 19

AUTHOR: David Homer/PRC Engineering

ADDRESSEE: Andy Boyd/EPA

DESCRIPTION: Transmits draft report on the technical review of the closure plan

3. 1. . - 0002 Microfilm Reel Frame Begins 1 Ends 1

DATE: 09/12/89 PAGES: 70

AUTHOR: Richard C. Bachman/U.S. Dept. of Agriculture

ADDRESSEE: Michael F. Gearheard/EPA

DESCRIPTION: Transmits the revised proposed closure plan and comments

3. 1. . - 0003 Microfilm Reel Frame Begins 1 Ends 1

DATE: 08/29/90 PAGES: 23

AUTHOR: Hong West &amp; Assoc./

ADDRESSEE: U.S. Dept. of Agriculture/

DESCRIPTION: Monitoring Well Report, Yakima Agricultural Research Laboratory, Closure of Hazardous Waste Septic System

3. 1. . - 0004 Microfilm Reel Frame Begins 1 Ends 1

DATE: 10/01/90 PAGES: 9

AUTHOR: Alvin Humphrey/U.S. Dept. of Agriculture

ADDRESSEE: Debbie Robinson/EPA

DESCRIPTION: Transmits an informal "hot spot" pesticide detection sketch map

3. 1. . - 0005 Microfilm Reel Frame Begins 1 Ends 1

DATE: 10/10/90 PAGES: 162

AUTHOR: Hong West &amp; Assoc./

ADDRESSEE: U.S. Dept. of Agriculture/

DESCRIPTION: Quarterly Ground Water Monitoring Report, Yakima Agricultural Research Laboratory

## PESTICIDE LABORATORY YAKIMA (YARL) - A/R INDEX

3. 1. . - 0006 Microfilm Reel Frame Begins 1 Ends 1  
DATE: 01/23/91 PAGES: 62  
AUTHOR: Hong West & Assoc./  
ADDRESSEE: U.S. Dept. of Agriculture/  
DESCRIPTION: Quarterly Ground Water Monitoring Report, Yakima Agricultural  
Research Laboratory

3. 1. . - 0007 Microfilm Reel Frame Begins 1 Ends 1  
DATE: 04/12/91 PAGES: 82  
AUTHOR: Gary Bruno/PRC Environmental Management, Inc.  
ADDRESSEE: Marcia Bailey/EPA  
DESCRIPTION: Transmits QAPjP for the Yakima Agricultural Research Laboratory  
site

3. 1. . - 0008 Microfilm Reel Frame Begins 1 Ends 1  
DATE: 05/03/91 PAGES: 67  
AUTHOR: Hong West & Assoc./  
ADDRESSEE: U.S. Dept. of Agriculture/  
DESCRIPTION: Quarterly Ground Water Monitoring Report, Yakima Agricultural  
Research Laboratory

3. 1. . - 0009 Microfilm Reel Frame Begins 1 Ends 1  
DATE: 07/30/91 PAGES: 52  
AUTHOR: Hong West & Assoc./  
ADDRESSEE: U.S. Dept. of Agriculture/  
DESCRIPTION: Quarterly Ground Water Monitoring Report, Yakima Agricultural  
Research Laboratory

3. 1. . - 0010 Microfilm Reel Frame Begins 1 Ends 1  
DATE: 10/10/91 PAGES: 6  
AUTHOR: PRC Environmental Management Inc./  
ADDRESSEE: EPA/  
DESCRIPTION: Operation and Maintenance Inspection, Data Validation Report

3. 1. . - 0011 Microfilm Reel Frame Begins 1 Ends 1  
DATE: 10/10/91 PAGES: 56  
AUTHOR: Gary Bruno/PRC Environmental Management Inc.  
ADDRESSEE: Marcia Bailey/EPA  
DESCRIPTION: Transmits Operation and Maintenance Inspection Report and  
analytical data

## PESTICIDE LABORATORY YAKIMA (YARL) - A/R INDEX

3. 1. . - 0012 Microfilm Reel Frame Begins 1 Ends 1

DATE: 11/01/91 PAGES: 67

AUTHOR: Hong West & Assoc./

ADDRESSEE: U.S. Dept. of Agriculture/

DESCRIPTION: Quarterly Ground Water Monitoring Report, Yakima Agricultural Research Laboratory

3. 1. . - 0013 Microfilm Reel Frame Begins 1 Ends 1

DATE: 11/08/91 PAGES: 397

AUTHOR: Douglas Geller/Hong West & Associates

ADDRESSEE: Lyndia Countee/USDA/ARS

DESCRIPTION: Transmits the raw laboratory data and QA/QC information for the clean closure project, part 1

3. 1. . - 0014 Microfilm Reel Frame Begins 1 Ends 1

DATE: 11/08/91 PAGES: 385

AUTHOR: Douglas Geller/Hong West & Associates

ADDRESSEE: Lyndia Countee/USDA/ARS

DESCRIPTION: Transmits the raw laboratory data and QA/QC information for the clean closure project, part 2

3. 1. . - 0015 Microfilm Reel Frame Begins 1 Ends 1

DATE: 11/19/91 PAGES: 144

AUTHOR: Hong West & Associates/

ADDRESSEE: U.S. Dept. of Agriculture/

DESCRIPTION: Yakima Agricultural Research Laboratory Closure Certification Report, Hazardous Waste Septic System Remediation, Volume 1 of 2

3. 1. . - 0016 Microfilm Reel Frame Begins 1 Ends 1

DATE: 11/19/91 PAGES: 245

AUTHOR: Hong West & Associates/

ADDRESSEE: U.S. Dept. of Agriculture/

DESCRIPTION: Yakima Agricultural Research Laboratory Closure Certification Report, Hazardous Waste Septic System Remediation, Volume 2 of 2

## PESTICIDE LABORATORY YAKIMA (YARL) - A/R INDEX

3. 1. . - 0017 Microfilm Reel Frame Begins 1 Ends 1

DATE: 01/13/92 PAGES: 38

AUTHOR: Hong West & Associates/

ADDRESSEE: U.S. Dept. of Agriculture/

DESCRIPTION: Final Report, Yakima Agricultural Research Laboratory, Hazardous Waste Septic System Remediation, Draft

3. 1. . - 0018 Microfilm Reel Frame Begins 1 Ends 1

DATE: 07/22/92 PAGES: 72

AUTHOR: Gary A. Bruno/PRC Environmental Management, Inc.

ADDRESSEE: Paul Sonnenfeld/EPA

DESCRIPTION: Transmits analytical data for groundwater samples

3. 1. . - 0019 Microfilm Reel Frame Begins 1 Ends 1

DATE: 08/20/92 PAGES: 2

AUTHOR: Paul Sonnenfeld/RCRA

ADDRESSEE: Marcia Bailey/RCRA

DESCRIPTION: Operation and Maintenance Inspection Report

SUB-HEAD: 3. 2. . Certificate of Completion

3. 2. . - 0001 Microfilm Reel Frame Begins 1 Ends 1

DATE: 01/24/92 PAGES: 2

AUTHOR: Alvin Humphrey/U.S. Dept. of Agriculture

ADDRESSEE: Kevin Schanilez [sic]/EPA

DESCRIPTION: Transmittal letter for Certification of Closure for Hazardous Waste Septic Tank System, Raw Data Submittal, Quarter No. 5  
Ground Water Monitoring Report and Closure Certificate Report

3. 2. . - 0002 Microfilm Reel Frame Begins 1 Ends 1

DATE: 02/28/92 PAGES: 1

AUTHOR: Alvin Humphrey/U.S. Dept. of Agriculture

ADDRESSEE: Kevin Schanilez [sic]/EPA

DESCRIPTION: Letter re Certification of Closure for Hazardous Waste Septic Tank System and supporting documents and U.S. Dept. of Agriculture's anxiety about finalizing the project

## PESTICIDE LABORATORY YAKIMA (YARL) - A/R INDEX

3. 2. . - 0003 Microfilm Reel Frame Begins 1 Ends 1

DATE: 03/23/92 PAGES: 1

AUTHOR: Kevin Schanilec/EPA

ADDRESSEE: Alvin Humphries [sic]/U.S. Dept. of Agriculture

DESCRIPTION: EPA and Ecology's review comments on the Closure Report

3. 2. . - 0004 Microfilm Reel Frame Begins 1 Ends 1

DATE: 04/06/92 PAGES: 3

AUTHOR: Alvin Humphrey/U.S. Dept. of Agriculture

ADDRESSEE: Kevin Schanielec [sic]/EPA

DESCRIPTION: Transmits a detailed response by Hong West & Assoc. to a request for additional information

3. 2. . - 0005 Microfilm Reel Frame Begins 1 Ends 1

DATE: 08/07/92 PAGES: 2

AUTHOR: Douglas Geller/Hong West & Assoc.

ADDRESSEE: Alvin Humphrey/U.S. Dept. of Agriculture

DESCRIPTION: Clarification of laboratory analysis QA/QC

SUB-HEAD: 3. 3. . Equivalency Determination

3. 3. . - 0001 Microfilm Reel Frame Begins 1 Ends 1

DATE: 08/13/92 PAGES: 1

AUTHOR: Alvin Humphrey/U.S. Dept. of Agriculture

ADDRESSEE: Dana Rasmussen/EPA

DESCRIPTION: Petition for Equivalency Determination

3. 3. . - 0002 Microfilm Reel Frame Begins 1 Ends 1

DATE: 08/20/92 PAGES: 3

AUTHOR: Betty Wiese/EPA

ADDRESSEE: File/

DESCRIPTION: Equivalency Demonstration of Clean Closure in Compliance with OSWER Policy Directive 9476.00-18

SUB-HEAD: 3. 4. . State Concurrence Letter

08/27/92

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PESTICIDE LABORATORY YAKIMA (YARL) - A/R INDEX

3. 4. . - 0001 Microfilm Reel Frame Begins 1 Ends 1

DATE: 08/21/92 PAGES: 1

AUTHOR: Julie Atwood/Washington State Dept. of Ecology

ADDRESSEE: Alvin Humphrey/Agriculture Research Service

DESCRIPTION: Completion of Closure Activities

## PESTICIDE LABORATORY YAKIMA (YARL) - A/R INDEX

HEADING: 4. 0. . HEALTH ASSESSMENTS

SUB-HEAD: 4. 1. . ATSDR Health Assessments

4. 1. . - 0001 Microfilm Reel Frame Begins 1 Ends 1

DATE: 11/18/88 PAGES: 2

AUTHOR: Office of Health Assessment/Agency for Toxic Substances and  
Disease Registry (ASTDR)

ADDRESSEE: /

DESCRIPTION: Preliminary Health Assessment

## PESTICIDE LABORATORY YAKIMA (YARL) - A/R INDEX

HEADING: 5. 0. . NATURAL RESOURCES TRUSTEES

SUB-HEAD: 5. 1. . Correspondence

5. 1. . - 0001 Microfilm Reel Frame Begins 1 Ends 1

DATE: 08/05/92 PAGES: 2

AUTHOR: Lynda Priddy/EPA

ADDRESSEE: Chuck Clarke/Washington Dept. of Ecology

DESCRIPTION: Notification of Federal Natural Resources Trustees re planned deletion of the site from the National Priorities List

5. 1. . - 0002 Microfilm Reel Frame Begins 1 Ends 1

DATE: 08/05/92 PAGES: 2

AUTHOR: Lynda Priddy/EPA

ADDRESSEE: Chris Mebane/DOC - NOAA Coastal Resource Coordinator

DESCRIPTION: Notification of Federal Natural Resources Trustees re planned deletion of the site from the National Priorities List

5. 1. . - 0003 Microfilm Reel Frame Begins 1 Ends 1

DATE: 08/05/92 PAGES: 2

AUTHOR: Lynda Priddy/EPA

ADDRESSEE: Charles S. Polytika/U.S. Dept. of the Interior, Regional Environmental Officer

DESCRIPTION: Notification of Federal Natural Resources Trustees re planned deletion of the site from the National Priorities List



## PESTICIDE LABORATORY YAKIMA (YARL) - A/R INDEX

HEADING: 6. 0. . PROPOSED PLAN

SUB-HEAD: 6. 1. . Proposed Plan

6. 1. . - 0001 Microfilm Reel Frame Begins 1 Ends 1

DATE: 08/22/92 PAGES: 8

AUTHOR: Lynda Priddy/EPA

ADDRESSEE: /

DESCRIPTION: Proposed Plan for no further action

SUB-HEAD: 6. 2. . Support Memo

6. 2. . - 0001 Microfilm Reel Frame Begins 1 Ends 1

DATE: 08/18/92 PAGES: 38

AUTHOR: Bruce A. Woods/EPA

ADDRESSEE: Lynda Priddy/EPA

DESCRIPTION: Transmittal of data validation reports

6. 2. . - 0002 Microfilm Reel Frame Begins 1 Ends 1

DATE: 08/19/92 PAGES: 1

AUTHOR: Patricia Cirone/EPA

ADDRESSEE: Carol Rushin/EPA

DESCRIPTION: Memo re remedial action goals

6. 2. . - 0003 Microfilm Reel Frame Begins 1 Ends 1

DATE: 08/20/92 PAGES: 3

AUTHOR: Lynda Priddy/EPA

ADDRESSEE: Pat Cirone/EPA

DESCRIPTION: Response to memo re remedial action goals action levels

## PESTICIDE LABORATORY YAKIMA (YARL) - A/R INDEX

HEADING: 7. 0. . PUBLIC PARTICIPATION

SUB-HEAD: 7. 1. . Correspondence

7. 1. . - 0001 Microfilm Reel Frame Begins 1 Ends 1

DATE: 11/28/89 PAGES: 1

AUTHOR: Chuck Shenk/EPA

ADDRESSEE: George Sundstrom/U.S. Dept. of Agriculture

DESCRIPTION: Letter to notify recipient that the required public notice is scheduled to appear on 12/15/89

7. 1. . - 0002 Microfilm Reel Frame Begins 1 Ends 1

DATE: 02/23/87 PAGES: 1

AUTHOR: Mike McCormick/Washington State Dept. of Agriculture

ADDRESSEE: Lyn Frandsen/EPA

DESCRIPTION: Letter re citizen's possible exposure to pesticides

SUB-HEAD: 7. 2. . Community Involvement Plan

7. 2. . - 0001 Microfilm Reel Frame Begins 1 Ends 1

DATE: 08/01/92 PAGES: 10

AUTHOR: EPA/

ADDRESSEE: /

DESCRIPTION: Community Involvement Plan for Site Deletion

SUB-HEAD: 7. 3. . Public Notices

7. 3. . - 0001 Microfilm Reel Frame Begins 1 Ends 1

DATE: 11/15/89 PAGES: 4

AUTHOR: EPA/

ADDRESSEE: Yakima Herald - Republic/

DESCRIPTION: Public Voucher for Advertising

7. 3. . - 0002 Microfilm Reel Frame Begins 1 Ends 1

DATE: 08/24/92 PAGES: 3

AUTHOR: EPA/

ADDRESSEE: /

DESCRIPTION: Public Notice and Opportunity to Comment RCRA Closure of a Hazardous Waste Disposal Area

08/27/92

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